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Original Articles

A STUDY OF THE NERVE CELL CHANGES OF THE SPINAL CORD IN A CASE OF EPIDEMIC CEREBRO-SPINAL MENINGITIS.*

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SINCE the discovery by Nissl of a selective stain for the nerve cell and the perfecting of his method, countless workers have devoted themselves to its study. The total number of positive facts brought out is not very large concerning either the normal or the abnormal cell.

The interpretation of the finer constituents of a normal nerve cell, as brought to light by the Nissl method, is a matter of much debate and uncertainty, and naturally this uncertainty is increased when pathologic cells are brought into the question.

It is not difficult to determine why this should be so. A stain possessing the delicacy of Nissl's methylene-blue method might naturally be expected to act differently under very slight variations from the normal; and as the normal limit of a nerve cell is by no means fixed, we can readily understand why so much discrepancy in the various investigations should exist.

There is no histologic method, perhaps, which is more influenced by the "personal equation" of the worker than the Nissl, and for this reason it is especially important for every one, in his own work at least, to have a uniform technique.

If it were possible to have a universal technique then there would be an element of criticism removed from every one's results; that of accidental appearances due to individual variations in method.

This paper is to be regarded as a preliminary report of an attempt to determine the pathologic changes found in the nerve cell in acute infectious diseases directly or indirectly affecting the central nervous system, and, as such, any conclusions advanced may be modified or entirely changed by subsequent observations.

The material of the paper was furnished by the cord and brain of an individual who died of cerebro-spinal meningitis epidemica last spring. I am indebted to Dr. Willard Bartlett, pathologist to the City Hospital, for the specimen.

The method of examination followed is a slight modification of the original Nissl, which I have been using for nearly three years and have found satisfactory in every way.

The technique of the stain as described by Nissl is very difficult to follow, even in normal specimens; in pathologic ones it may be practically impossible.

Nissl hardens his preparations in alcohol only, and cuts his sections directly from the alcohol without any imbedding.

His sections are commonly from 10-15 μ thick; thicker sections are unfit for Nissl work.

This is such an uncertain procedure, and so impossible in some pathologic preparations—for example, in the case of a spinal cord which may be more or less softened by a meningeal effusion—that a slight modification is necessary.

While working in Jolly's laboratory in Berlin, a method which did away with this first difficulty was devised and preparations so made were compared with those made by the strict Nissl, to see if any changes due to the different methods followed could be found.

The experiments were made first with normal human and animal cords and brains, then with the cords and brains of paretic dementia, senile insanity and alcoholic brain.

No differences at all could be found in the results of the two methods, and although the modified Nissl may be open to the criticism of introducing two foreign elements not found in the original Nissl, namely, that of formalin and celloidin, yet I think in the light of the experiments referred to that these objections need not be considered.

The method is as follows: The specimen must be removed as soon after death as possible; a delay of more than twelve hours renders the preparation unfit for Nissl work.

Small sections, about half an inch square, are cut and placed in a ten per cent. formol solution, which is changed after a few hours. The specimen is placed in 95 per cent. alcohol from 24 to 72 hours, until it is thoroughly hardened, then in thin celloidin for 24 hours; again in thick celloidin, and then allowed

*Read before the St. Louis Biologic Society, June 13, 1899.

to harden in the block. Sections of from 5 to 10 *u* in thickness are then cut and placed again in 95 per cent. alcohol for a few minutes. They are now transferred to the Nissl solution, which consists of methylene-blue (B) 3.75, Venetian soap 1.75, and distilled water 1000 parts, and heated slowly until bubbles appear. After cooling, the sections are decolorized in a solution of 95 per cent. alcohol 90 parts, and colorless analin oil 10 parts.

The sections should be passed through several dishes. I use four, as a rule, until in the final one the differentiation is complete; that is, the white matter should be absolutely unstained. The surplus blue is washed out by 95 per cent. alcohol and the preparation is now ready for clearing.

This is done with origanum oil and should be very thorough. About two ounces of oil should be allowed to run very slowly over the slide and repeated two or three times, so that the mechanical effect of the oil can be fully utilized. The oil is now removed by a drop or so of benzine and the preparation thoroughly dried by means of a thin-fibered filter paper; the section is finally mounted in Canada balsam or in benzocolophonium.

A perfect Nissl should show a perfectly unstained or slightly-tinged white matter, and under a low power the nucleus, nucleolus, the Nissl bodies and the dendrites should be seen. If this does not appear under the low power, except in the cases of the cells found in the locus ceruleus and the chromophilic cells of the anterior horn and the substantia nigra, I regard the preparation as overstained.

I trust that you will pardon this very detailed description, but the more I work with the Nissl the more I am convined that an absolutely perfect and constant technique is essential to any reliable and trustworthy results. In regard to the countless variations of the Nissl method, such as thionin, erythrosin, methylene-blue, Held, neutral red, etc., I am inclined to believe that none of them give such reliable and clear pictures as the methylene-blue.

A normal nerve cell so stained is roughly polygonal, with numerous protoplasmic branches, which are termed variously dendrites or neurites. One of these branches, smaller than the others and less stained and having fewer side branches, is the axis cylinder.

Such a cell contains a nucleus stained light blue and a deeply stained nucleolus; dividing the nucleus from the rest of the cell is a membrane called the nuclear membrane.

Scattered through the cell are darkly stained, variously formed granules; these are known as Nissl bodies. They extend into the dendrites, except the axis cylinder, and have a more or less definite arrangement. Between these bodies are unstained spaces known as spongioplasm. (Plate I.)

A minute description of these various parts of a nerve cell, and a discussion of the various theories concerning them, would be beyond the scope of the present paper; merely a cursory description will be attempted here.

Inasmuch as the pathologic part of this paper will be limited to the sensory and motor cells of the cord, they only will be dealt with. The cells of the brain proper and of the posterior root ganglions will be altogether omitted.

The Nissl bodies, according to Obersteiner, are the characteristic constituents of nerve cells wherever found. There has been endless debate about them. The following three questions are to be answered concerning them:

(1) Are they artificial products formed by the chemical action of the fixing fluids?

(2) Do they exist as such in the living cell?

(3) Their function—have they to do with the nutritive or the conducting function of the nerve cell, or with both?

The first and second questions only concern us here. Held, whose opinion about all that concerns the minute anatomy of the nerve cell is second to that of Nissl, believes that the Nissl bodies do not exist in the living cell, but are artificial products caused by the fixing agents.

In support of this theory, he cites the fact that in preparations absolutely fresh and not exposed to any chemical action whatever, he was unable to find any Nissl bodies. These bodies are soluble in the living alkaline or neutral protoplasm of the cell; they begin to be visible when the cell protoplasm becomes acid or when fixing agents act upon them. Lenhóssek asserts, on the contrary, that he has seen the Nissl bodies in fresh preparations prepared according to Held's method.

The latest work on this subject is found in an article by Turner* who examined the cells from various animals as freshly as possible and stained according to the method recommended by Held for the study of nerve cells without hardening fluids. He found that the Nissl bodies were present in every case and their appearance in every way resembled that of the ordinary Nissl preparation. These observations tend to disprove Held's assumption that the Nissl bodies are products of the fixing agents, but do not affect his further supposition, that the acidity of the cortex, set up after death, may precipitate the hyaloplasm in the form of Nissl bodies.

It is difficult indeed to decide which of these vari-

*Notes on the Chromophilic Material in the Motor Cells of Brain and Cord. John Turner, *Brain*, No. 85, Vol. 22.

Chromophilic material in the form of Nissl bodies is met with in animals immediately after killing and in human beings at least seventy minutes after death when the nervous substance has merely been colored by a solution of methyl blue in normal salt without any further addition of reagents.

ous opinions is right; but the fact should be borne in mind that whatever fixing solution is used and whatever method of staining, the Nissl bodies, in a normal cell, always appear in their characteristic way, and until a more perfect method of examining a fresh cell is devised the Nissl bodies are to be regarded as a definite anatomic structure of a nerve cell and not as mere artefact, and though their appearance in the living cells may be different from that of the dead cells, yet their constant reaction to certain pathologic processes must be regarded as directly due to these processes and must furnish us for the present at least a definite working basis for their study.

An artificial product is never constant under different conditions, and if the Nissl bodies are to be regarded as artificial, then by the same reason doubt must be thrown on all pathologic cell changes, which are studied by means of histologic method.

I might mention here that the Nissl bodies form, by their arrangement in more or less parallel rows, a certain test by which motor cells can be recognized. This much is susceptible of proof; beyond this, as Nissl says, we are on debatable ground.

Concerning the function of these bodies and the various theories advanced upon this point, it is best in this paper to omit, as it is by far too theoretical a subject to be treated here.

Between the Nissl bodies you will observe certain uncolored channels, or as Flatau describes them, "clear streets between the chromophil clumps."* This is called by various names: Zwischensubstanz, substance achromatique, Grundmasse des Nervencell-protoplasm, achromatin, etc. There is much doubt concerning this substance. The difficulty of finding out anything exact about it is increased by the fact that there is no satisfactory specific method of staining it as yet devised. In the Nissl and thionin stains and their modifications this substance is unstained.

Held has devised a very complicated stain with erythrosin and an acetone, methylene-blue solution for the special study of this substance. I have been able to see in very thin paraffin sections (2 to 5 μ) certain vague fibrillary structures which may or may not be the fibrillen described by Fleming, Bender, Dogiel, Becker, Lugano, and denied by Lenhóssek and Held.

Becker, by a method as yet unpublished, believes that the fibrillæ are a direct continuation of the primitive fibrilla of the axis cylinder. There is as yet no unity of opinion on this question. The present idea of these two structures is very well stated by Goldscheider and Flatau thus:

"The nerve cell protoplasm consists of two distinct parts—a chromatic, preformed according to Nissl, and an achromatic. This chromatic substance when stained by Nissl's method appears in the form of varied irregular masses which in different varieties of cells are arranged differently. The achromatic substance presents more or less of an unstained, striped appearance, which may be caused by the presence of minute fibrils or a net-like structure."*

Pigment is often observed in the human nerve cell in both normal and pathologic conditions; it is generally light-yellow or brown and often occupies the entire pole of a cell. Pigment, as such, has probably no important pathologic significance. According to Obersteiner, it is found frequently in the nerve cells of senile individuals.†

The nucleus is less deeply stained than the nucleolus and occupies a more or less central position in the cell. It is always important to observe the position and the relative size of the nucleus and its staining quality.

The third question, relating to the function of the cell and the part played by its various constituents, will not occupy us very long. I do not propose at the present time to discuss the physiology of the nerve cell in the light of the Nissl method, but I venture to touch one side of the subject, merely by way of criticism.

A great deal has been heard lately concerning the disproving of the neuron idea by means of the Nissl method. There is nothing, as far as I know, which can be brought out by the Nissl stain which can prove or disprove the neuron theory. And one should accept with a great deal of reserve, demonstrations based upon Nissl preparations. With even a very perfect Nissl the dendrites and the axis cylinder can be followed only for a short distance from the cell body, and with the distance from the cell body the possible sources of error are much increased. Then again, it must be remembered that the axis cylinder is devoid of Nissl bodies or nearly so, and, as I have said before, it is the Nissl bodies and their basophilic property which bring out the anatomical details of the whole cell structure. Considering that it is upon the axis cylinder and its ending that one of the main conceptions of the neuron theory rests, the absurdity of trying to disprove or prove the neuron idea by a Nissl stain is evident.

Before entering upon the pathologic part of this paper, it will be necessary to study the various cell types as they appear normally. The motor cell is taken from the nucleus of the hypoglossus (this we have already considered).

The type of sensory cell is found in the posterior root ganglion. Unfortunately these were not preserved in this specimen.

A cell from Clark's column or from the posterior

*Normal und Pathologische Anatomie der Nervencellen. Goldscheider and Flatau.

*Goldscheider und Flatau: Beiträge zür Pathologie und Anatomie der Nervencellen. 1898.

†Obersteiner: Anleitung beim Studium des Baues der Nervösen Central Organe. 1896.

horns will show the difference between the two types. (Plate VII.)

The sensory cells are, as a rule, larger than the motor and have fewer dendrites. The Nissl bodies do not stain so deeply and are not arranged in a parallel row, which is so characteristic of the motor cell. The shape of the cell is mostly ovoid and is generally somewhat lengthened out; very often the cell is unipolar.

Between a typical motor and a typical sensory cell there is such a marked difference that it is easy to distinguish them, but it is to be remembered that there are countless variations of both types, which render in some instances a differentiation impossible.

The cord and brain in this case presented the typical appearance of a spinal meningitis. The meninges of the cord were thickened and hyperemic, the blood vessels congested and filled with blood. Thick, yellowish pus filled the space between the dura and the pia mater posteriorly, forming a crescent of purulent matter with the points anterior. This effusion was most pronounced in the lower dorsal region. The ventricles were filled with this same pus and the base of the brain, especially in the neighborhood of the optic nerve, and the large blood vessels.

It will be seen at a glance that two factors will have to be considered in the explanation of the pathogenesis of this disease: (1) The effect of the mechanical pressure on the cells of the posterior horns, caused by this tremendous accumulation of purulent matter. (2) The effect of the toxic material originated by the micrococcus intracellularis meningitidis.

Marinesco divides nerve cell changes into a primary and secondary, the former being due to direct action of the agent in question; the latter indirect, *i. e.*, when a nerve fibre has been divided. The most characteristic and the most interesting pathologic change which takes place in a nerve cell is the process of chromatolysis, which is a disintegration of the chromophylic elements of the cell.* Three forms of chromatolysis have been observed: (1) Perinuclear; (2) peripheral; (3) diffuse. (Plate IV.)

This differentiation has little real value. Chromatolysis is explained as follows by Shaffer: The chromatic elements have to do with the nutrition of the cell and react first to pathologic processes. The disappearance of the chromatic substance is an anatomic index of the increased using up of the potential energy of a nerve cell, without adequate replacement.†

Another very marked change seen in a nerve cell is the migration of the nucleus, or the *Wandstellung* of the nucleus, of the Germans.

Further changes are the total disappearance of the nucleus, or variations in its form and in staining qualities, vacuolization of the nucleolus and changes in its form, total disappearance of the nerve cell, and various changes in the dendrites, by which they become swollen, irregular and lessened in number.

These changes just mentioned are so well characterized that their existence cannot well be doubted. The slighter and more delicate variations described by some authors will not be considered.

The cells of Clark's column, and to some extent the other cells in the posterior horns, from every region of the cord, showed to a more or less degree all or some of these changes.

No pathologic cells whatever were found in the anterior horns or in any motor cells. In this respect the results of Barker and those in this case differ very materially. (Plate II.)

Clark's column (or Stilling's) is a name given to a group of cells lying in the posterior horns, near the inner edge; they are mostly developed in the dorsal region and gradually disappear in the cervical and lumbar parts of the cord. These cells are sensory in function probably, and are composed mostly of what are known as column cells*; that is, they originate axis cylinders which find their endings in the cord itself. They send branches to the direct cerebellar tract and are intimately connected with it.

What explanation is there for the fact that Clark's column almost alone is affected by the process in question? Have we a right to assume that there is a specific effect of the disease upon the cells of Clark's column, or can we explain the destruction of the cells in Clark's column by means of the mechanical effect of the pressure of the effusion?

Barker adopts this view and points out that the effusion pressing upon the direct cerebellar tract affects the cells of Clark's column, with which they are connected.† This explanation appears to me to be faulty, for the following reasons:

If mechanical pressure caused changes in the nerve cells, then, where the mechanical pressure would act to the best advantage, there the greatest amount of cell degeneration should be found.

The cells of the hypoglossus nucleus were absolately normal. The nucleus lies at the base of the fourth ventricle, very near the surface. Owing to

*Pathologie de la cellule nerveuse. Rapport presentèe au Congrès interne de medicine. Moscow (Marinesco).

*Sur les lesionis du system nerveus central au cours des maladies nerveuses. Marinesco.

†Uber Nervencellveränderung während der Inanition. Schaffer. Neurog. Centralblatt, 1897, No. 18.

*Leyden & Goldscheider. Nothnagel Special Therapie und Pathologie. Die Erkrankung des Rückemarks, Bd. 1.

†F. T. Barker on Certain Changes in the Cells of the Ventral Horns and of the Nucleus Dorsalis (Clarkii) in Epidemic Cerebro-Spinal Meningitis. Brit. Med. Jour., Vol. XXV. Dec.

the more horizontal position of the medulla, any fluid in the fourth ventricle would exert pressure to a better advantage than in the cord. As was stated before, the fourth ventricle was filled with pus.

Further, if the mechanical pressure of the effusion causes cell changes, then these cell changes should bear a certain relation to the amount of exudate. Where the exudate was greatest there should be found a more extensive cell degeneration than where there was very little or no effusion. I was unable to find that the amount or the severity of the cell changes bore any relation to the amount of the exudate. (Plate V.)

In this specimen the amount of exudate was very small, yet the cell degeneration was as severe and pronounced as anywhere else in the cord.

It is a fair conclusion, I think, to state that the mechanical effect of pressure alone can not explain the fact that the sensory cells and Clark's column alone are affected. We must assume that the effect on the cells is due to some toxic agent, and that this toxic effect is to a certain degree specific in its action. This naturally brings us to the question of the specific action of diseases. The question of specific reaction is not a new one, although as yet it has found few pertinent proofs and no satisfactory explanation.

As a basis for the consideration of this particular case the following hypothesis is advanced: The more highly developed a cell is the more specialized become its functions and its anatomic structure. The nerve cell is the most highly organized of all animal cells, and to a certain degree is already specialized with division of sensory and motor cells.

It might be expected here to find a certain specific effect for every specific agent. The central nervous system has been examined in animals poisoned with different drugs to see if each poison produced a definite change in the nerve cell which could be recognized as due to the poison in question and no other.

Goldscheider and Flatau* published in 1898 a series of experiments on animals, in which they found certain drugs always prodnced certain anatomic changes in the nerve cells. An animal poisoned by phosphorus, for example, showed nerve cell changes which differed from those of an animal poisoned by arsenic.

Nissl believes that we are justified in thinking that there is a specific change for some specific agents.

Jacollet,† on the other hand, explains the various cell changes found as not dependent upon the various poisons, but due to the different degrees of marasmus produced by them.

*Loc. cit.

†Etude sur des alterations des celles nerveuses de la moelle et des ganglions spinaux dans queques intoxications experimentales. Jacollet: Beit. zur Path. Anatomie, Bd. 22, S. 443.

From this idea of the specific action of poisons it is but a step further to the specific action of diseases, especially those diseases in which the effect is produced by a toxin. The best proven example of the specific action of a disease upon the nerve cell is that of rabies. This has been carefully studied by V. Babes.* He found certain characteristic forms of cell degeneration, which were always present and which always affected certain cells more than others. This, then, is a specific pathologic process.

A review of the work that has been done on this subject in the past two years alone is impossible here. The general impression derived from a careful study of the literature on this topic is, that as yet we are scarcely justified in believing that the specific action of diseases, poisons, or of toxins is yet proven. That it is very probable and that it may be proven by careful work in the future are two very plausible deductions. Let us apply, then, this idea merely as a hypothetical question to this case of an acute infectious disease, to explain the pathologic changes found. The Clark cells were found affected and profoundly degenerated in their entire distribution. This is the most distinctive fact brought out by this study. All who have studied the nerve cell changes in epidemic cerebro-spinal meningitis by means of the Nissl method agree on this point.

Other cells of the posterior horns, sensory, were found degenerated, but not so constantly as the cells of Clark's column.

No pathologic changes were found in the cells of the anterior horns or in any motor cells.

The following conclusions, then, seem to be justified from the facts observed:

(1) In epidemic cerebro-spinal meningitis we have to do with a process which affects the sensory cells.

(2) The Clark system of cells shows a greater tendency to react to the disease than any other system of cells.

(3) This tendency cannot be explained by means of the effect of the mechanical pressure of the exudate.

(4) The degeneration of these cells is caused by a toxin which originates from the specific agent of the disease, the micrococcus intracellularis meningitidis of Weichselbaum, which has a special affinity, first, for all sensory cells; secondly, particularly for the cells of Clark's column, therein showing a possible specific action towards these cells.

(5) If the exudate does exert any pressure it is to be regarded as affecting the cells indirectly, *i. e.*, it diminishes the normal resistance of the cells which come within the line of its force, and the cells so acted upon react easier to the toxic material than the others.

*Ueber den Einfluss Verschiedenen Infectionen auf die Nervencellen des Rückenmarks. V. Babes. Ber. Klin. Wochenschrift, Nov. 3, 1898.

GENERAL REMARKS ON ANTITOXINS.*

BY E. BEHNING.

IN the year 1893 I introduced the term "antitoxins" for the specifically anti-poisonous substance of the tetanus and diphtheria serum, on account of the provenience of these antitoxins from the blood of isopathically immunized animals, and in contradistinction to antitoxic substances of different origin I called them blood-antitoxins. These blood-antitoxins, after the coagulation of the extravascular blood, pass into the serum, in which they are represented by intact molecules of genuine proteids. The water, the salts, and all the serum constituents soluble in a saturated solution of ammonium sulphate, may be separated from the albumin and the globulin without any loss of antitoxin; but any physical or chemical procedure leading to a denaturation of the genuine proteids of the serum involves a loss of antitoxin.

At present we work on the ground of the hypothesis that the antitoxic proteid bodies are transported into the blood from such cells as, during immunization, from tetanus or diphtheria toxins undergo alterations of their actual and potential qualities. If in the future this hypothesis should prove to be satisfactorily established, the conclusion would be reached that in the blood of immunized antitoxin-furnishing animals antitoxically active and antitoxically inert proteid bodies exist side by side. And, in fact, it is possible to separate to a certain degree the antitoxic proteid from the inert proteid, as shown by Aronson in 1893. From his experiments, it is to be inferred that the antitoxic substance is again a proteid; and all other experiments to isolate the active principle have ever and again demonstrated that in endeavoring to characterize chemically the antitoxic substance we can do nothing but state their proteid nature. As yet, however, the chemistry of proteids does not offer any means of deciding what relations exist between the specific functions of the proteid body and its chemical composition or its physical properties. We are, for some time to come, compelled to consider the antitoxic function of a proteid as a phenomenon, the occurrence or absence of which we can study under certain well-defined experimental conditions, and of which we can measure the intensity.

As in the study of the magnetic or electric energy, we try to induce a law from many single observations; here as there, we try furthermore to make subservient to our practical aims the particular phenomenon and the particular energies of matter. We leave it to the future to learn whether beyond the phenomenology satisfactory knowledge can be gained in a philosophic way, regarding the essence of matter. Only philosophic ignorance can believe that the nature of magnetic energy has been solved by anybody. The resignation, however, with which physicists and chemists admit their ignorance of the nature of things, does not prevent us from practically utilizing magnetic energy. It has prompted advances in this direction. In the same way, I hope to serve the practical interests better in regard to the antitoxic power of the blood antitoxins, by considering for the present the question what it can do, and how its activity can be increased and utilized, than by entering into sterile speculations regarding the questions as to the nature of the antitoxic substance. We call it proteid; but even if, in this way (this is, however, not the case), a satisfactory definition would seem to be given, the question remains: How does antitoxic proteid differ from non-antitoxic proteid, except by the demonstration of the antitoxic function? That our ignorance in this regard is not greater than in other realms of natural science, becomes clear at once in putting the same question in regard to the magnetic force: By what character does magnetic iron differ from non-magnetic iron, except by the demonstration of the magnetic function?

These general remarks regarding blood antitoxins, I do not consider superfluous in view of the objections of adversaries of serum-therapy to the effect that as yet nobody has been able to demonstrate a pure antitoxic substance. They contend that for this reason the whole theory of blood antitoxins ought to be considered questionable and unscientific. In my opinion, such a criticism exhibits a frequent, but nevertheless grave, error in logic. We demonstrate that the antitoxic energy is inseparably combined with the proteid of the blood serum. If one is asked that the chemical difference between antitoxic and non-antitoxic proteid be stated, I consider this unjustifiable to the same degree as that a physicist ought to give the chemical difference between magnetized iron and non-magnetized iron, before the existence of magnetism could be recognized.

*Translated from Allgemeine Therapie der Infectious-Krankheiten, Berlin und Wien, 1899.

THE TREATMENT OF SIMPLE AND SPECIFIC VAGINITIS.

BY MILTON P. CREEL, Central City Ky.,
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VAGINITIS, either simple or specific, forms one of the most prevalent affections which we have to encounter in the treatment of diseases peculiar to females. Most cases of leucorrhea, and nearly all cases of ulceration of the cervix and affections of that class, are purely cases of vaginitis in some of its stages or degrees of intensity. The treatment of vaginitis, whether it be due to specific cause or not, varies very little as regards the means of treatment. Specific or simple vaginitis both I have found to yield very speedily to correct treatment; and cases that have run along for considerable length of time can be

brought under control very often in a surprisingly short period of time.

Vaginitis, either specific or simple, has an acute and a catarrhal stage. The treatment must, therefore, be considered under these heads to be comprehensive. In most cases we do not see the patient in the acute stage, the patient usually presenting herself only after she has had a discharge for some weeks or even months. In fact, generally the discharge has assumed considerable importance when these patients present themselves. In the acute stage the patients have severe pain on urination; they have fever of two or three degrees above the normal, and are restless, and often there is considerable delirium. In this stage of the affection relief by opium and the application of hot cloths applied to the external vulva will have to be sought.

Alkaline diuretics have to be given to render the urine negative and unirritating to the inflamed urethra. Means of this character persisted in for three or, at furthest, four days, will generally bring about a decided improvement in our patient's condition, the discharge now beginning and the acute painful symptoms disappearing.

The treatment of the catarrhal stage is of the greatest importance, on account of the loss of strength, the irritation from the discharge, which is often offensive; so that substantial relief is often so imperative.

The old remedies—copaiba, buchu, cubebs, and the terebinthinates—generally have been employed in this disease. These agents invariably derange the stomach, and, in fact, so interfere with nutrition that they often brought even robust patients to the lowest state of health. The practice of giving agents of this class has now happily been abandoned. In fact, internal treatment has now no advocates for the treatment of the disease *per se*. Of course, if there is any associated constitutional disease, or dyscrasia, this must receive proper treatment.

There is no doubt in the mind of any really practical man that this disease is purely local, and applications of proper remedies will bring results of the most satisfactory kind.

Injections of nitrate of silver, the sulphate of zinc, acetate of lead, and agents of that nature have long been employed. That these do bring some relief, is undeniable, but they are altogether inadequate if we would thoroughly treat the patient. By this, I mean that we should lose no time in using the most effective treatment at our command. I now give no injections, but rely upon the employment of soluble alum comp. vaginal pessaries. These are composed absolutely of pure glycerine and alum which contains none of the irritating properties, with the generally esteemed antiseptics, carbolic acid and ichthyol. These pessaries by their shape are easily applied high up in the vagina. They have never in any case proved an irritant, but on the other hand they are very soothing and at once begin to exert a soothing effect upon the inflamed vagina. I have treated a number of cases with these pessaries and my results have been most satisfactory indeed.

In order to better illustrate my results and the treatment, I give below in outline the clinical histories of several cases which I have treated according to the lines laid down here.

Mrs. B. S., aged 31, came to my office for relief from vaginitis. She had a constant discharge which had continued for the last two years. Examinations revealed inflammation of the vagina high up, and the cervix was considerably ulcerated. This woman had grown very weak in consequence of the drain of the discharge, and whenever she caught a cold or whenever she exerted herself much she never failed to have a more profuse discharge and pain in the lumbar region.

I put her at once on soluble alum comp. vaginal pessaries. She was to introduce one at night on going to bed and next morning she syringed herself with warm water. Then she applied another pessary and remained in bed for six hours. After four days the discharge was much less and she only used one pessary a day and that being at bed time. In ten days longer she had no discharge and quit using the pessaries altogether. She now has gone two months and has increased in flesh and strength, and has had no return of her vaginitis.

S. P. W., aged 20, a prostitute, consulted me for gonorrhea. The discharge was quite profuse. I told her I could cure her quickly if she would follow my directions strictly. She was put to bed and a soluble alum comp. pessary was used every eight hours. After the second day one was used every twelve hours. On this course she had very little discharge after the fifth day, and then she used only one every night at bed time. In ten days from the beginning of treatment she was discharged cured. These pessaries distend the vaginal rugæ, and in this way break up the sites of many cases of chronic gonorrhea.

Mrs. S. L. L., age 37, the mother of six children, applied for treatment of leuchorrhea. Examination revealed the presence of cervical inflammation and vaginitis of considerable extent. She was cautioned against overwork, and a soluble alum comp. pessary was used every night. On this treatment, in which she followed directions strictly, she got entirely well in two weeks. After three weeks she has no untoward symptoms and is getting fleshy.

Mrs. S. O. F., age 41, has been a sufferer with what she called "womb disease" for two years. Examination revealed vaginal inflammation and considerable ulceration about the cervix. I at once put her on the soluble alum comp. pessaries as in the former cases, using one on going to bed. This patient took cod liver oil for several weeks to build her up, she

having lost considerable flesh and was generally much run down. On this treatment she made a complete recovery in three weeks.

Mrs. S. M. C., 25 years old, applied for treatment for vaginitis with discharge. While she denied the possibility of gonorrhea, I found the gonococcus under the miscroscope. I put her on the soluble alum comp. pessaries, using one every night at bed time and one in the morning. I enjoined the recumbent position for the first five days. After that time she only used one at bed time. I was able to discharge this patient after she had taken the treatment for twelve days.

Mrs. S. O. K., aged 44, had been a sufferer for a year and had now begun to decline in her general health. She had considerable vaginal inflammation and the discharge was quite profuse. I at once began the employment of soluble alum comp. vaginal pessaries. She used one every night. Improvement was manifest in a few days and she used one only every other day. On this treatment she made a complete recovery in a period of three weeks and has had no return of her trouble.

TEMPORARY DIVERGENT STRABISMUS ACCOMPANYING GENERAL NARCOSIS.

By WILLARD BARTLETT, A.M., M.D., St. Louis.

AN observation which I recently made in conjunction with Prof. T. C. Witherspoon leads me to the belief that the above-mentioned phenomenon must be much more common than one might suppose from the extremely rare notice given it.

The patient is a young man of a highly nervous temperament. His eyes have never given evidence of any abnormality, excepting a slight astigmatism, for the correction of which he finds glasses necessary.

While he was undergoing a deep chloroform narcosis, I noticed a marked degree of divergent strabismus, affecting both eyes, but chiefly the right; absolutely no trace of the same had been present before the inhalation of chloroform began, nor could it be noticed after the effect of the drug commenced to disappear.

The only explanation I have to offer for this transitory phenomenon is in a measure similar to that of Schweigger for many cases of permanent strabismus, viz., want of muscular balance in the recti.

In this patient the disparity between the internal and external recti is not so great that it asserts itself while the individual is in full control of his voluntary muscles; but the moment volition ceases the recti, like other voluntary muscles, come to rest, each in the length natural to it, and the extremely movable eyeball is rotated in the direction of the muscle which happens to be relatively shortest, the actual length of the external rectus being presumably always greatest.

Editorial Comment.

THE final report of Schlatter's case of total extirpation of the stomach shows that the woman died of a recurrence, after fourteen months. After the operation, by which the entire stomach was taken out, she gained in weight and showed a general improvement in nutrition. Thirteen months after the operation she complained of a pain in the left side after taking solid food. Later there developed a hard tumor in this area, which was followed by the development of cachexia and other general symptoms of carcinoma. At the autopsy, there were no signs of a secondary diverticulum, such as was noted in Schuchardt's case.

BALTIMORE is extremely fortunate in having had a public-spirited citizen, Mr. Harry Walters, who has given $45,000 for three public baths. It is gratifying to note that philanthropy is beginning to turn its attention from the foundation of free hospitals and dispensaries, which are not needed, to the more practical form of doing something for the crowded districts of our large cities. It is impossible to estimate the good accomplished by free public baths during the heated term in these crowded quarters. Belonging to the same class of wise sanitary measures are public play grounds, gymnasia, coffee houses, and reading rooms. We know of no more inviting field for the philanthropist than the establishment of such institutions, and the first that should be started are free baths.

IT is a barren month that does not herald a cure for tuberculosis, and a year ago it would have been easy to predict that the then surprising reports of the antiseptic properties of formalin would be soon exploited as a cure for this disorder. The Italian newspapers have contained glowing accounts of the discovery by Professor Vincengo Cervello of the University of Palermo, of the value of formalin administered hypodermically in these conditions. Within a few days the lay press of Chicago heralded the advent into that city of a Frenchman with an hypertrophied scientific reputation who is about to establish a treatment for the cure of tuberculosis. He was only awaiting the arrival of his machinery, which consisted of some powerful electrical batteries by which, formalin applied to the external surfaces, could be driven by the electric currents into the substance of the lungs.

HUNTER ROBB reports an interesting case of an operation for retroverted uterus made under cocain anesthesia. A general anesthetic could not be given on account of a complicating goitre and cardiac disease. An interesting fact noted during the operation was that traction upon the ovaries was intensely painful.

MEDICAL REVIEW

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THE DIABETES BLOOD TEST.

While *a priori* it was unlikely that a nosologic picture like that of "diabetes mellitus" with its varying etiologic history should be characterized by a single peculiar blood reaction—or to state it in more explicit terms, that the abnormal excretion of glucose with the urine—this single common symptom of a number of different diseases comprised under the name of diabetes should cause conditions which could alter the behavior of the red blood cells towards certain aniline stains. The number of investigations to elucidate the nature of this so-called reaction remained very small, and especially in this country only empiric attempts at the verification of the test were made. The only paper which purports to be a scientific progress in this direction is that of Gutcher, who claims that Bremer's diabetic test is the result of hyperglycosuria, an assertion that neither the writer of these lines nor any other investigator has been able to confirm. The methods of obtaining the reaction have been worked out by its discoverer into the finest and most trifling details; nevertheless the results have not been uniform, and contradictory assertions are found in a number of casuistic publications. Beyond stating that the alkalinity of the blood and the glucose contained in the latter had nothing to do with the reaction, Bremer did not attempt any rational explanation. It remained for Schneider, of Heidelberg, to grasp the importance of one of Bremer's observations, namely, that normal blood specimens when treated with diabetic urine showed the very same characteristic coloration as diabetic blood. Experimenting with neutral solutions of glucose or with normal urine, to which glucose in varying amounts was added, his results were always negative. It could therefore not be the glucose that caused the reaction. Furthermore diabetic urine, from which the glucose was removed by fermentation, nevertheless continued to act on normal blood in the same peculiar way. Diabetic urine ceased to give the desired result as soon as it was neutralized or made alkaline; it ceased to act after it had been preserved for some time with chloroform. If on the other hand neutralized diabetic urine was slightly acidulated (by any acid) the reaction reappeared. This led to experiments with normal acidulated urines and with pure watery solutions of a number of acids, all of which fluids invariably yielded a positive result. The reason why Bremer in his experiments with normal urines (which are always acid) obtained negative results was the prolonged staining (three minutes) to which he subjected his specimens. If the acidity is increased a little even after this time the result is positive; in the slightly acid normal urines a short exposure, too, always results in this way. As we know, diabetic urines contain an abnormal amount of various acids, and there can be no doubt that in the experiments with these fluids the increased acidity forms the causative factor. That in normal persons, too, such a hyperacidity of urine may exist is well known; people living on an almost exclusive meat diet therefore show the reaction in their blood and urine to perfection. Dogs fed on meat always give a positive result.

Schneider went further. He mixed normal blood with small amounts of various acids, prepared the specimens in the ordinary way, and did not fail to obtain the "diabetes" test. He concludes his brilliant study with the sentence that the positive result of such a blood test is in no way characteristic or pathognomonic of diabetes. It may be, he suggests, that under equal conditions a method for the measuring of the alkalinity of the blood could be constructed upon it. If thus the specific or diagnostic (it has even been asserted prognostic) signs formed of the diabetes blood test must be entirely abandoned, it is interesting to note how, even after this roundabout way, the importance of the hyperproduction of acids in diabetes has been accentuated; that they played an important part in the reaction has long since been suspected by the writer.

A cotemporary informs us that "Dr. William Russell, of the class of 1826, and the oldest Harvard graduate, died last week, aged 99. He was a practicing physician who had never worn an overcoat." This last sentence in the foregoing attracts our attention and shows the increasing difficulty of obtaining a livelihood in the profession. A man who had been practicing since 1826 and who has never worn an overcoat will doubtless soon be followed by accounts of others who have been practicing even longer periods and have never been enabled to wear waistcoats and perhaps trousers. Especially will this be the case if dispensaries, hospitals, and medical clubs continue increasing in numbers as they have for the last few years.

Society Proceedings

MEDICAL SOCIETY OF CITY HOSPITAL ALUMNI.

STATED MEETING, THURSDAY EVENING, APRIL 6, 1899, THE PRESIDENT, DR. GEO. HOMAN, IN THE CHAIR.

DR. GREENFIELD SLUDER exhibited some

Nasal Specimens with Demonstration of Methods of Preservation.

I present some skulls which show the anatomy of the nose, prepared after a method of preservation which is quite as interesting as the specimens themselves. While in Vienna two years ago I experienced difficulty in preparing specimens of the nose. These skulls, which came out of the pathologic institute there, were taken off the fresh cadaver and hardened in alcohol. At that time I tried to prepare some without decalcification, but found it almost impossible to get a skull which would show the ethmoid cells, the hiatus semilunaris, the infundibulum, without tearing and spoiling the specimen very much, so I boxed these skulls up and brought them home, having in mind to try the scheme of decalcifying. On my arrival I tried a mixture of 10 per cent. nitric acid with 15 per cent. of hydrochloric acid, and this is the specimen which resulted. It is stained with nitric acid in contact with the soft parts, which makes picric acid, a yellow stain. I then tried a 15 per cent. solution of hydrochloric acid and obtained such specimens as these—perfectly white without being in any way discolored. I found, however, that the hydrochloric acid decalcified very much more slowly than the other mixture, requiring about two weeks instead of five days. I then tried an acid solution in formol to prevent softening. It worked very well, but added to hydrochloric acid the mixture made a much firmer specimen. In one of the specimens it is interesting to note how very small the frontal cavity is; it is so small as to be absent above the line of the eyebrow, as shown by the section cut through at that point. The skull, after such treatment, and after the acid being washed off, cuts just about like a piece of Swiss cheese. I will now cut further into this specimen. It remains perfectly firm and the cut section shows a perfectly clean surface without any dislocation of the membrane or bone.

On the line with the eyebrow the frontal cavity is absent; it comes in, however, somewhat below on a level with the cribriform plate. The section also shows how extremely thin are the walls of the frontal cavity next to the orbit and cranium proper. It shows conclusively how an empyema of the frontal cavity is most apt to break into the skull; next into the orbit. This is cut anteriorly to the middle third; probably it will pass readily through the frontal cavity. This specimen is not as handsome as others, being discolored for some reason, probably when it was put into alcohol. It shows the jaws in contact with each other and the relation of the epiglottis to the uvula, and gives a sight of the lingual tonsil. Enlargement of this tonsil is not uncommon, and we see what might be mistaken for a reflex phenomenon—the dislocation of the epiglottis backward in such a fashion as to make an organic obstruction—the tipping down of the epiglottis causing dyspnea.

Here is a section that will show the middle turbinated composed entirely of ethmoidal cells, which is not so uncommon, although not looked for when we think of the middle turbinated. The entire middle turbinated is occupied by two ethmoidal cells; it appears to be an enlargement of the middle turbinated, the posterior two-thirds being made up by a single cell; these cells are in direct communication with the upper cells. This shows what is fairly constant, that is, whatever may be the deviation of the ethmoid cells beyond, it is divided primarily into four cells, the anterior being the bulla. It is divided by three laminæ into four sets of cells, the most anterior often times extending beyond the uncinate process of the ethmoid. The posterior cell, which is likewise a constant one, opens above the middle turbinated, very nicely shown in the specimen. The others are not absolutely constant, but nearly so. The laminæ run transversly and divide the ethmoid into something of a constant arrangement.

The difficulty in preparing such sections in bony skulls, as you can readily imagine, is quite considerable and it is almost impossible to avoid tearing.

DR. ROBERT J. TERRY exhibited

Gross Sections of the Human Body.

Let me express my pleasure in accepting an invitation to exhibit my sections which your society has been good enough to extend to me. I am much gratified in knowing that so many are interested in this work and that such preparations are held useful by others than teachers of anatomy.

Hearing that Dr. Sluder had made some beautiful specimens by a process of decalcification and sectioning, I went to him and learned his method, for which I am very much in his debt. I resolved to make use of the decalcification method in preparing sections of the whole body, believing that if properly manipulated the decalcifying agent would do as well in this as with the heads which Dr. Sluder used. I chose this way of preparing the body for section cutting because the doctor's results were so good, and because it has, I think, certain advantages over the freezing and sawing process.

In the preparation of the sections which you see here the process was divided into four stages:

(1) Preserving and hardening the subject.
(2) Decalcification of the bones.
(3) Embedding.
(4) Sectioning.

1. The whole body was injected (by siphonage into the femoral artery) with about 1½ gallon of a mixture of equal parts of formaldehyd and 95% ethyl alcohol. On the day following the injection the body was found to be quite firm and rigid. The limbs and head were then carefully severed from the trunk by means of a sharp knife and saw and placed in the decalcifying agent in large stone jars. The trunk was put into a barrel which had previously been coated inside with melted parafine and covered with the decalcifying fluid.

2. I made the decalcifying fluid of hydrochloric acid and water, mixing one part of the commercial acid with twelve parts of water. Decalcification takes place slowly if the body is whole; removal of the skin hastens it. Six weeks' time was required to soften the bones in this subject and during that time I frequently tested the condition of the skeleton by running long pins into the body.

3. When I was able to run a pin through the bone in any part of the body I considered the work of the acid done and at once removed the subject from the acid bath. It was then washed with water, wiped dry, and finally smeared with glycerine; which done, it was set upright in a strong paper cylinder and embedded in a stiff glycerine jelly.

4. My macrotome is an imperfect affair, consisting of a wooden box open at each end and large enough to hold the paper cylinder. It was fastened upright to a bench and at such a distance from the floor as would allow the movement of a lever up and down. This raised or lowered a platform within the box upon which rested the embedded subject. The platform could be held at any desired level by bracing up the lever. All space between the cylinder and the sides of the box was packed with "excelsior shavings," which prevented the cylinder from rocking during the sectioning while not interfering with the action of the platform at other times.

After several trials with different instruments I found that for my macrotome a knife with a long stiff blade was most suitable, the kind used in hotels and restaurants for slicing large roasts. The blade is nearly 20 inches long. I should have stated before that the upper edge of my macrotome box was made even and smooth in order to serve as a guide when cutting the sections; the knife-blade was kept closely applied to it and made to pass through the body with a sawing motion.

The sections of the trunk were made by cutting horizontally through each vertebral body. If you will examine them you will find that the soft parts are well preserved and not at all injured by the acid. One can easily find the larger nerves, which are white, and you see that the organs, hardened *in situ*, are not disturbed in their relative positions; most of the veins are injected with dark red, coagulated blood, and muscles, tendons and joint structures are quite natural. When cutting through the abdomen many pieces of the intestine fell out of the section. These I have had little trouble in replacing properly, since the fixation of the tissues was so perfect that each fragment bore the impress of the one next to it, and the readjusting was simple and accurate.

The bones are in no way damaged as far as the shape is concerned; but the color of the cancellous tissue is changed to a gray or light-brown. The decalcified bone resembles cartilage in density and in the ease of cutting it; it does not lose its shape by bending or twisting, but when exposed to the air shrinks and dries to a hard mass.

Decalcification might with profit be used in the course of practical anatomy in our medical schools to facilitate the dissection of parts that are at present almost inaccessible to the student. I refer to such important regions as the temporal bone, the nasal fossæ and the air sinuses. These parts can be admirably displayed by the average second-year student with no other instrument than a scalpel and scissors. And while speaking of the temporal bone, one advantage which the "decalcification and knife" method has over that of freezing and sawing is in the fact that with the former process no part is wasted in the cutting, and this is quite an important matter in sectioning such parts as the nasal region and ear.

DISCUSSION.

DR. M. A. GOLDSTEIN said that the work of decalcifying gross sections of the human body is very valuable for the rhinologist, as by this process a good deal could be accomplished which could not be done in any other manner. He would be glad to show the Society at some future time gross sections of the ear decalcified with phloroglucin and hydrochloric acid. It was a German process, used mainly for microscopic rather than for macroscopic work. The question of discoloration, which is still a matter of experimentation, as Dr. Terry suggests, is one which offers much difficulty on account of the decalcifying process. The oculists, he thought, were far in advance of other anatomical workers in embedding sections of the eye. He thought that in the decalcifying process an intense acidity was produced, which might be responsible for the failure of the gelatine to act kindly in the embedding process. He would suggest exposing the acid to an alkaline medium until the reaction is absolutely neutral to litmus paper, and then try gelatine. Frozen sections had one advantage, he thought, in that the spiculæ of bone are preserved to a nicety if a cut can be well made. The work can be very cleanly done if the proper precautions are used in the selection of a saw, the blade of which is finely serrated, and where the section has been carefully and homogeneously frozen. Another feature of the decalcifying process which he thought open to improvement was that of discoloration. In many of the specimens the tissues, both hard

and soft, were so colored that it was sometimes difficult to distinguish between the hard and the soft structures, the bone being almost as yellow as the skin. If the gentlemen would continue in their efforts, however, the speaker thought that all these difficulties would be finally overcome. One fault of making a frozen section of a fresh head was that the skin was not brought under the influence of the dehydrating process, which shrinks the tissue to a certain extent.

DR. V. P. BLAIR said he thought the value of the frozen sections in the study of anatomy was very great. To the man studying anatomy it would enable him to make out the absolute relations which might not otherwise be made out so well; and to the man teaching anatomy to demonstrate from the dissection to the frozen section was of great advantage. He had found it of much service in his work. In this line of work he said he had been trying to preserve sections with the color preserved; while this was not a matter of great importance it served to attract the attention of students more closely. In some of the subjects he had been able to preserve the color of the liver and kidneys and lungs. His work, however, was not by any means as good as Dr. Terry's. He believed the subject of decalcifying the whole body had originated with Dr. Terry; the mounting of specimens in gelatine had been done before.

DR. CHAS. SHATTINGER said he did not think a controversy as to whether frozen sections or the decalcified body should be used was in place, because the decalcifying process presented advantages of its own. It made dissection of difficult regions of the body very easy, and in that way filled a want that the frozen section could not supply, however superior the latter might be in other respects. This was a subject new to him, and he felt entirely unable to add anything to the practical features of the work. The mention of a case which he had recently seen, however, he thought might be of interest in connection with the nasal specimens presented by Dr. Sluder.

DR. SLUDER had called attention to the ease with which hypertrophic conditions of the glandular tissue at the base of the tongue might cause dyspnea. The speaker said he recently had a young man come to him complaining of attacks of suffocation, as the patient put it. The patient had feelings in the larynx of such a nature as to alarm him. He was subjected to a laryngoscope examination, and at the base of the tongue was found a small growth partly concealed by the glosso-epiglottic folds. It hung from a pedicle in a manner to touch the epiglottis during deglutition, giving the sensation of a foreign body. He removed it with considerable ease, finding it not larger than a small pea and the pedicle perhaps a quarter of an inch long. After the removal the symptoms disappeared.

DR. SHATTINGER said he knew this was only a subsidary matter, but thought it would emphasize what might be learned from seeing these specimens.

DR. F. REDER asked if this process of decalcification possessed superior advantages over freezing in the making of sections demonstrating various stages in embryonal life. When Wickersheimer came out with his fluid some thirty years ago, objects such as butterflies, locusts and humming birds could be preserved for an indefinite length of time in the fluid. The color of objects preserved was not destroyed, nor were the tissues hardened. He said he would also like to know to what extent such specimens as are before us to-night were used in the teaching of anatomy in foreign universities.

DR. SLUDER, in closing, said, speaking of the first employment of the decalcifying process, and of Dr. Goldstein's statement that it had been employed and abandoned, though for what reason Dr. Goldstein did not mention, he recalled that Prof. Politzer had some ear specimens which, he believed, were decalcified, though he could not be certain of that. He did not tell much about them, but everyone who saw will remember their extreme beauty. The specimens were prepared in closed jars in some sort of medium which rendered them transparent, probably xylol. There are a great many of these specimens in Vienna; Dr. Hyck has some several hundred, but they are all hard specimens which he had prepared at great cost and labor. This subject suggested itself to the speaker in connection with the teaching of anatomy of the nose. He considered it absolutely essential that the cavities of the nose be demonstrated to medical students in order to give any idea of where nasal suppurations begin. Another advantage is that it shows the cartilage with the vomer intact, also the extent to which the former extends backwards; it is the only way to do so, unless one of these specimens was outlined in some color. As these specimens are in more or less constant use for such demonstrations, they were much handsomer when first prepared. He thought he had never seen just such a condition as described by Dr. Shattinger, though he had seen fibromata occurring on the tongue. Enlargements of the lingual tonsil were not at all uncommon and they seem to tickle the epiglottis. He had seen one case which seemed purely mechanical; the tonsil was pushed backwards and seemed to close the larynx. When acetic acid was applied and the tonsil shrunk, the dyspnea and cough ceased. On the use of these specimens in classes he had already spoken. He added, however, that they were used to demonstrate the experimental puncture into the antrum. The puncture is done at the lower border at the junction of the middle with the lower third. At that point, although bony, the wall is thin and the cut can be made without pain. At the junction of the middle with the posterior the needle is carried in an outward

direction, the direction being upward, outward and backward. The fixed point at which to bring pressure is the anterior inferior nasal spine. In such a position a little pressure carries it through. There is a distance of about 1½ inches to the posterior limit of the antrum. In speaking of this, the suggestion naturally comes, "Why does one not go through the membranous portion of the middle meatus—that portion made up by membrane alone." If that portion is selected it may go all right if the antrum is large; if small it will readily pass upward with a little too much pressure into the orbit, and if pressed still further it goes to the pterygoid fossa.

Program of the St. Louis Medical Society, Saturday evening, July 8, 1899: "Fifty Years Study and Practice of Rhinology, from 1849 to 1899"—continued, by Dr. Thos. F. Rumbold; "Appendicitis from a Medical Standpoint," by Dr. I. N. Love.

The Hemocytometer has been adopted as an advertising medium. A number of summer hotels have had the blood of their guests examined before the entering of the institution and after residence for a time. The increase in the "reds" is supposed to be something of an index of the value of the nutriment purveyed in these institutions.

In the *Cincinnati Lancet-Clinic* of June 10, 1899, is a translation from Felke, in which a Caesarian operation is described as performed at Uganda. According to this writer, the operation is old and deemed to be no more formidable than the spaying of female animals. "The woman, placed upon a couch, was made to drink palm wine until she was half stupefied; then the operator, with two assistants, placed the woman upon her left side; then washing the patient's belly, as well as cleaning his own hands, the darkey gynecologist commenced murmuring a medical incantation, afterward taking a knife, especially used on such occasions, and making an incision from the umbilicus to the mons veneris. Abdominal and womb walls were then cut through and the child taken out and handed to the assistant. The placenta was then extracted. All this time the assistant prevented the intestines from protruding as well as he was able. The edges of the wound were touched with a red hot iron to stop the hemorrhage, and any issuing blood was emptied out by holding the woman up. Then sutures were put in with a rude metal needle and a poultice composed of vegetable pulp applied. The temperature of this particular patient never rose above 38 C. and the pulse was never over 108. On the third day a portion of the sutures were removed, the rest on the sixth day. The wound suppurated but slightly, and the patient was well on the eleventh day."

Current Medical Literature

Diphtheria: The Serum Treatment in General Practice.—P. H. Lyon* advocates the use of serum in all cases of diphtheria in which it is not absolutely contraindicated. It should be administered as early as possible, its curative value being greatly diminished after the third day of the disease. The site of injection most suitable is the surface of the abdomen in the lumbar region; in small children the external surface of the thigh presents fewer obstacles and is to be preferred. Under strictly aseptic precautions, about 1500 units of Behring's antitoxin should be injected; the size of the dose is not fixed, it may reach 3000 units and be repeated three times. For immunization a dose of from 500 to 1000 units is all that is necessary. A sterile compress should be held on the puncture for a few seconds and then collodion applied; it is not advisable to employ massage, as absorption is rapid in these regions.

Cerebrospinal Pneumococcus Infection.—Bayard Holmes† reports a case occurring in a girl fifteen years old, who had been suffering for five weeks with complex symptoms resembling closely those of relapsing fever. The illness began with a severe chill, headache and pain extending down the back and legs; the temperature fluctuated about 104 and 105 for nine days, when there was a complete remission of all symptoms, which lasted one week, when a second attack occurred, continued for seven days, and was followed by a cessation of all symptoms as before. A third relapse lasted only two days, and after an intermission of four days the fourth occurred. The chief complaint was hyperesthesia, located over the scalp, face and arms, most marked behind the left ear. General physical examination was negative; blood examination proved the absence of relapsing and malarial fever, but showed slight leucocytosis. Cultures were then made from cerebrospinal fluid, all of which showed the presence of a pure culture of the pneumococcus. The use of serum obtained from a case of convalescent pneumonia proved ineffectual, and opening of the mastoid on the left side, upon the appearance of slight edema in this area, was also of no avail. Twelve hours later the child died. Autopsy showed that the base of the pons and medulla were covered with a yellowish, firm, pus-like exudate, extending over two-thirds of the right hemisphere of the cerebellum and one-third of the left.

The Youngest Case of the Initial Lesion of Syphilis.—E. L. Cocks‡ reports a case of syphilitic infection in an infant nine months old. The parents were absolutely healthy. When two weeks old the

*New York Medical Journal, June 3, 1899.
†Jour. Am. Med. Association, June 17, 1899.
‡Jour. Cutan. and G. U. Dis., June, 1899.

baby was given the bottle on account of insufficiency of mammary secretion. About nine months later the baby became fretful and cried when the nipple was placed in his mouth. After one week a small sore was noticed on the upper lip, which developed into a hard chancre, with swelling and tenderness of the right parotid and submaxillary glands. A universal macular syphilide and general adenopathy developed. A careful examination of the parents failed to show any syphilitic manifestations.

The State of the Gastric Secretions in Organic Disease of the Heart.—F. H. Murdoch,* from the record of sixty-seven cases, concludes that there is no constant relation between the state of the gastric secretions and any one form of organic heart disease, and that the presence of heart disease does not, in many cases, stand in the way of the recovery of patients suffering from the various forms of stomach trouble. In those who recovered, or were greatly improved, intragastric faradization was used in seven, lavage and faradization in one, and lavage alone in two. The patients were directed in regard to bathing, exercise, etc., and the diet in all cases was carefully regulated.

On a Compound Microscope for Viewing the Eye.—L. Howe† describes a new instrument which gives a better view of the anterior portions of the eye than any similar microscope. The objective consists of two systems, separated from each other about eight centimeters; there are also two eye pieces. The instrument is mounted so that it can at once be brought into any position. The advantages claimed for it over others are: First, in the degree of amplification; second, in the clearness of definition; third, in the size of the field, as the angle of the aperture is thirty-five degrees. As to the real value of the microscope, it is claimed to be of use in observing physiological variations in the size and form of the pupil, in studying certain pathological conditions and in photographing the anterior portion of the eye, in either a normal or abnormal condition.

Traumatic Ruptures of the Heart, with a Case.—R. C. Newton‡ reports a case of rupture of the heart occurring in a man 28 years old; while riding a bicycle rapidly, the front wheel came in collision with a hose, four inches in diameter, distended with water; the head of the wheel was broken off, and in falling the rider was struck in the chest by the broken end of the post; he collapsed, was nearly pulseless and in great pain; he did not vomit nor raise any blood; he recovered sufficiently to ask for water, but could swallow little; an hour and a half after the fall the man died. Autopsy revealed a fracture of the sixth left costal cartilage, near its junction with the sternum; the pericardium was intact, but contained ten ounces of dark, clotted blood; the heart weighed ten and one-quarter ounces; its cavities were partly distended with blood. A transverse rent was found at the apex of the right ventricle, extending through its wall. The cause of death was evidently cardiac rupture, produced by the same force that had fractured the sixth costal cartilage. A short history of cardiac rupture is given, detailing cases published since 1871.

Report of a Case of Combined Typhoid and Quartan Malarial Fever.—C. F. Craig* reports a case observed at Chickamauga Park. The patient was seen after being ill for one week, and typhoid fever was at once diagnosed; on the twelfth day of his fever his blood gave a pronounced reaction to Widal's test, and the urine showed a marked diazo-reaction. Up to the twenty-second day the course of the fever was typically typhoid, and the temperature curve had begun to decline; malarial paroxysms then occurred, and blood examination during a chill showed that numerous full-grown and segmenting organisms were present; examinations were made daily and the organisms readily found. The fever was resistant to small doses of quinine, but large doses reduced it very promptly. Convalescence was very slow, the patient became extremely emaciated and anemic.

Proprietary Preparations: What Should Be the Attitude of the Medical Profession?—C. C. Yarbrough† draws the following conclusions: A physician cannot consistently prescribe or sanction the use of any proprietary whose active ingredients are not stated and their exact amounts given; secrecy of active constituents is, then, the great dividing line; but there are a number of preparations whose composition is openly published, but are ineligible and unfit for professional recognition; these comprise all of such nature, except those which are not advertised to the laity. A safe rule is for the physician not to prescribe or sanction the use of any preparation which does not give an entire formula of its active ingredients and their proportions and is advertised only in proper professional channels.

The Use of Holocaine as a Local Anesthetic in Eye, Ear, Nose and Throat Operations.—J. Guttmann,‡ from the results of investigations on the eye as regards cocaine and holocaine, believes that both are good local anesthetics, and for practical purposes there is no great difference between them as to time of onset or duration of anesthesia; the holocainized eye was red and inflamed, of normal tension, not protruding, pupil normal and palpebral fissure not enlarged,

*Am. Med. Journal, June 17, 1899.
†N. Y. Med. Journal, June 17, 1899.
‡N. Y. Med Rec., June 17, 1899.

*Phila. Med. Jour., June 17, 1899.
†Jour. Am. Med. Assn., June 17, 1899.
‡N. Y. Med. Jour., June 17, 1899.

this difference being due to the absence of vaso-constrictor effect, which is present when cocaine is used; holocaine is to be preferred in the removal of foreign body from the cornea, for strabismus operation, as cocaine causes the muscle to shrink; in the inflammatory affections of the conjunctiva and cornea, with painful blepharospasm. In choosing the anesthetic for operations on the ear, nose and throat, we must consider whether the disadvantage of freer hemorrhage after the use of holocaine is more objectionable than the shrinkage of the tissues following the use of cocaine. Holocaine is to be preferred when we wish to avoid the shrinking effect of cocaine, the bitter metallic taste of the latter drug, and in victims of the cocaine habit.

Further Report on the Imagination Reflex (Verstellungs Reflex) of the Pupils.—J. PILZ* relates the results of further experiments on the imagination reflex of the pupil. This reflex was first observed in a teacher of the university, and is as follows: When he would place before his mind the idea of a well-lighted place, his pupils would contract; the reverse took place when he imagined a dark place. Since that time this phenomenon has often been observed. The following conclusions are noted, from carefully carried out experiments on the subject: There is an associative movement of the pupils which is due to psychical action. The result of directing the attention to light or dark objects (cortical reflex, attention reflex) is a narrowing of the pupils by means of directing the attention to a bright object, which lies sideways to the line of vision; and widening of the pupils by means of directing the attention to a dark object, which lies sideways to the line of vision. The result of imagination only (imagination reflex of the pupils), is narrowing of the pupils by the imagination of light objects, widening of the pupils by the imagination of dark objects.

Hypotonia; Frænkel's Symptom.—H. C. WOOD,† referring to this symptom, has found that it is present in a few normal individuals, and has seen it in a woman with a general lack of muscular tone and in whom the knee jerk was wanting; in a case of tabes involving the upper portion of the spinal cord, in which the knee jerks were well preserved, the patient could not straighten the legs when flexed on the trunk in a recumbent position. He believes that the power to fully straighten the legs when in this position depends on a great loss of muscular tone, and that this condition is also at the base of the loss of knee jerk, so that one symptom is always parallel with, if not equivalent to, the other; the new symptom is therefore of comparatively little value in the diagnosis of primary tabes.

*Neuoglish Centralblatt, June 1, 1899.
†Phila. Med. Jour., June 17, 1899.

Cysticercus Cellulosæ of Brain and Spinal Cord.—J. B. DIAMOND* reports a case of this rare affection occurring in a married woman, 34 years old, native of Germany; when seen she was unconscious, after a number of convulsions, lasting two days; urine showed abundant albumin and a few casts; pupils contracted, no vomiting; at intervals marked spasms; clinical diagnosis was uremia. Post-mortem examination showed six granular bodies attached to the inner surface of the dura; the fissures were obliterated by adhesions of the arachnoid and pia, which were thickened, opaque and grayish. Scattered over the entire surface of the brain were cysts, and shrunken, yellowish, irregular bodies; both cysts and these masses were found also on the internal surface of the hemispheres; the spinal cord was involved as well. Microscopic examination revealed several rows of hooks and the suckers of a tape-worm head in the cysts. There was no history of tape-worm, and in what manner the ova gained entrance could not be ascertained.

Eosinophile Cells and Their Significance in the Sputum.—FUCHS† is of the opinion that eosinophile granulations in the leucocytes exist as a result of their phagocytic action upon disintegrated erythrocytes. This conclusion is based upon the facts that the greatest number of eosinophile cells in the sputum are found in hemorrhagic cases, that eosinophilia of the blood is frequently found in those with hemorrhagic diatheses, that the granules are albuminous bodies containing hemoglobin, etc. They are found in varying numbers in nearly all sputa. Much stress, therefore, cannot be laid upon their diagnostic significance. In bronchiectasis, bronchitis, colds, pharyngitis, as well as in bronchial asthma the eosinophile cells are found in increased numbers. In febrile conditions the number in the sputum, as well as in the blood, are decreased. In pneumonia, fetid bronchitis, advanced cases of tuberculosis, etc., they were greatly reduced during the febrile stage, but gradually reappeared with the decrease in temperature. Though present in the sputum of 73 per cent of cases of tuberculosis, little or no prognostic or diagnostic significance is attributed to them. This is contrary to the views of Teichmüller, who maintains that the presence or absence of the eosinophile cells in tubercular sputum is of significance in prognosis. The special bactericidal power that these cells are said to possess is nothing more than an augmented phagocytic action.

Creosotal in Pneumonia, Broncho-pneumonia and Other Acute Bronchial Affections.—CASSONTE and CORGIER. In the treatment of acute pulmonary affections remarkable results have been obtained by the authors in the use of large doses of creosotal (car

*Jour. Am. Med. Assn., June 17, 1899.
†Centralblatt für Innere Medicin, May 20, 1899.

bonate of creosote). Grippal bronchitis, croupous pneumonia, broncho-pneumonia, etc., have yielded readily to this treatment in their hands, when other remedies commonly used in like affections failed to produce satisfactory results. If begun early, the administration of creosotal reduces the temperature, prevents its rise so long as continued, and hastens reconvalescence. The best and most permanent results are obtained with large doses, varying, of course, with the age of the patient. An adult is given about 10 grammes daily. Creosotal has not that tendency to produce gastric disturbances so characteristic of pure cresote.

Traumatic Rupture of the Urethra.—E. J. SENN* favors the classification into partial rupture of the urethra without destroying its continuity, and complete rupture, entirely destroying its continuity; the most frequent cause of rupture of the urethra is falling astride of some object; the next a blow upon the perineum; while the least frequent cause is falling upon the pommel of a saddle. Location of the exact seat of the injury is difficult on account of the varying length of the urethra, the destruction and alteration of the position of the tissues by reason of clots and infiltration of urine. While the diagnosis of injury to the urethra is not difficult, it is by no means easy to reach a conclusion as to the extent of damage. As soon as the diagnosis is made, catheterization affords an efficient measure to combat retention. In the matter of treatment, suprapubic puncture is only of temporary service, and all cases require restoration of the urethra by perineal section with suprapubic cystotomy, when the proximal end of the urethra cannot be located.

Remarks on the Incision at the Outer Border of the Rectus for Appendicitis.—F. KAMMERER† reports twenty cases operated on by this method, in none of which the formation of hernia occurred, thus showing the possibility of preventing hernia by a vertical incision. A few of the patients have worn a support for some months but have them taken off; the majority have not worn any. From a purely mechanical point of view, the procedure is certainly equal, if not superior, to any other, for we have an incision through the posterior sheath of the rectus and the peritoneum covered after the operation, in its entire length and at every point, by a strong muscle, the individual fibers of which have remained intact.

A Case of Isolated Urticaria of the Tongue, Associated with Achlorhydria.—GOODALE and HEWES.‡ Isolated urticaria upon the oral mucous membranes has apparently not been hitherto observed. The lesions which were limited chiefly to the dorsum of the tongue, were in no way benefited by local applications and washes. The clinical symptoms, and the examination of the gastric contents point to the existence of gastritis atrophicans, the result of alcoholism. There is a complete absence of hydrochloric acid. The patient was advised to eat often and sparingly of highly nourishing, easily digestable foods. Strychnia, salol, gastric antiseptics, etc., were administered, with the result that the urticaria disappeared entirely, and three months later showed no tendency to recur. Salol was administered at intervals throughout.

"Christian Science and Allied Fads."—J. C. OLIVER,* in writing of the attitude that should be assumed by the medical profession, claims that it is unwise to abuse or antagonize those peculiar people. They should rather be educated and enlightened. The foundation stone upon which all "Christian Science," "Divine Healing," etc., rests is the *vis medicatrix naturæ*, which has been known by physicians for many decades. The second element that enters into these fads is "faith," the necessity and utility of which are recognized by the medical profession. The third factor to be considered is mental diversion, which is given its widest application in the Weir-Mitchell treatment. The profession believes in the same things, but calls them by their proper names; the most sensible course, therefore, is to acknowledge that the powers of nature give an appearance of truth to their claims and then to lead them to realize that physicians have employed these means for years, but that they constitute but a starting point in the science of medicine.

Tabetic Club Foot with Spontaneous Fracture; Roentgen Photograph.—SCHULTZ† describes this spinal form of *pied tabetique*, and demonstrates by means of the Roentgen ray. Patient 33 years old; syphilis 13 years before; typical tabetic symptoms; left foot a typical club foot, with a mal perforans on the large toe; first and third metatarsal bones are much swollen at their heads. There is an ankylosis between the talus and calcaneous, and between the os naviculare and os cuboideus. As is typical in this kind of deformity, the patient could go about, as he suffered no pain at all.

Pneumonectomy—The Future Treatment of Incipient Pulmonary Tuberculosis.—J. S. PYLE‡ advocates this method of treatment, basing his opinion upon experiments done by him upon dogs. As most cases of pulmonary tuberculosis begin with a single focal point of infection, he believes that excision of the area involved would be curative. The same measures as to cleanliness must be observed as in other operative procedures; when attempting the removal of

*Jour. Am. Med. Assn., June 17, 1899.
†N. Y. Med. Rec., June 10, 1899.
‡American Journal of Medical Sciences, April, 1899.

*Jour, Am. Med. Assn., June 17, 1899.
†Berl. klin. Woch., May 29, 1899.
‡N. Y. Med. Jour., June 10, 1899.

the apex the incision should be made over the fourth rib, to allow for the collapse of the lung on opening the pleural cavity; the lung should be engaged in the wound to obstruct the ingress of air; a ligature of silkworm gut should be thrown around the base of the mass and the engaged piece removed with the cautery after being caught in a clamp; the stump requires no further attention and is dropped back into the pleural cavity. Hemorrhage can he avoided by applying the ligature properly and by not puncturing the lung. Collodion hermetically seals the pleural cavity after suturing.

Nasal Bacteria; The Relation They Bear to Disease —D. B. KYLE,* from his own investigations, believes that the surroundings of the individuals have much to do with the presence or absence of bacteria, as well as their variety, found within the nasal cavity; the normal nasal secretion, unless it has been retained and has undergone some chemic change, does not form a suitable nidus for the development of bacteria. In diseases of the nasal cavities, in which there is accumulation of secretion, the bacteriologic examinations present such a variety of bacteria that no special one can be assigned as an etiologic factor. The bacteria found present on the nasal mucous membrane and in secretions include many of the pathogenic cocci and bacilli, besides many unclassified non-pathogenic germs. The bacillus of diphtheria was found on the apparently healthy mucous membrane after the individual had walked through the diphtheritic wards of the hospital and the tubercle bacillus after exposure to dusty air of the street.

A Case of Typhoidal Pleuritis.—WARBURG† reports a case which differed from the ordinary case of "typhoidal" pleuritis, in that the pleuritis developed one month after convalescence from typhoid fever, whereas in what we commonly term "typhoidal" pleuritis the process occurs coincident with the general attack of typhoid fever. In the case in question, bacteriologic examination of the chocolate-colored fluid revealed the presence of the bacillus typhosus in pure culture. The bacillus was also separated from the purulent sputum of this patient. It is a fact worthy of special mention that the production of a chocolate-colored pus in the pleural cavity is in perfect accord with the statement already reported, that the bacillus typhosus is not only pyogenic, but also has the power of provoking hemorrhagic suppuration.

The Voice in Diagnosis.—A. J. C SKENE,‡ after mentioning some of the leading principles in the study of the development of language, enters into quite a free elaboration of the following subjects: Morbid states of the voice indicating lesions of circulation; the voice as an index of the condition of the nervous system; the voice before and after major operations; the testimony of the voice after major operations; the voice in apathetic conditions of the nervous system; the significance of voice expressions of pain after abdominal operations. The voice in the various mental affections is still in the shades of obscurity and must yet be investigated.

Polyuria and the Excretion of Urea in Epilepsy. —DIDE and STENUIT.* From a systematic investigation of 120 epileptics in the service of Drs. Marandon and Montyel in Ville-Evrord, Dide and Stenuit arrived at the following conclusions: 1. Polyuria is almost constantly present in epilepsy, being more marked during the intervals between the crises. 2. The quantity of urea eliminated in twenty-four hours is less than normal in these cases. 3. The quantity of urea eliminated in twenty-four hours is markedly less than normal on the day of the crisis. This is due to the decreased elimination of the fixed constituents of urine which precedes the crisis, which is not compensated for by the temporary increase which followed the crisis. 4. The quantity of urea eliminated in twenty-four hours in the intervals between the crises is augmented. 5. Epilepsy thus differs in these particulars from hysteria, where nutrition is normal in the periods between paroxysms.

Chronic Middle-Ear Suppuration.—E. B. GLEASON† reports two cases successfully operated upon by the method of Professor Passow, of Heidelburg, with establishment of permanent retro-auricular opening. The average time required for a cure by this method is only eleven weeks; should a relapse occur the patient or his friends can readily keep the parts clean and apply sedative or astringent powders. The opening is not conspicuous and can be closed by a simple plastic operation if its presence is disagreeable. The advantages of this operation are that at all times free access is secured to the middle ear, all parts of which are plainly in view; if necessary, the curette, chromic acid, or pressure may he used to break down adhesions or remove exuberant granulations; dried secretions, dust and exfoliations of epidermis can be readily washed or wiped away and the parts kept in a healthy condition.

Vaginal Douches, Ante-Partum and Post-Partum.—L. N. BOSTON‡ summarizes the subject: 1. A profuse leucorrhea during the latter months of pregnancy is no indication for vaginal douching. 2. The chemical reaction of a discharge has but slight effect on its antiseptic powers. 3. The vaginal secretions of pregnant women rarely, if ever, contain pathogenic germs except gonococci. 4. Vaginal

*Jour. Am. Med. Assn., June 10, 1899.
†La Tribune Medicale, March, 1899.
‡N. Y. Med. Jour., June 10, 1899.

*La Tribune Medicale, January, 1899.
†Jour. Amer. Med. Assn., June 10, 1899.
‡N. Y. Med. Jour., June 10, 1899.

douches favor the development of cervical gonorrhea and puerperal sepsis. 5. The vaginal secretions may contain streptococci, staphylococci, diplococci and bacilli, all of which may be non-pathogenic. 6. A discharge from the cervix may show the presence of pathogenic bacteria after all other symptoms of sepsis have disappeared.

Surgery of the Trachea; Two Unusual Cases.—W. W. KEEN and W. S. JONES* report two cases as follows: Case I. Male, 30 years old, attempted suicide by cutting his throat with a penknife; complete closure of the trachea by a diaphragm above the tube which was inserted followed and persisted for thirteen months; breathing through the larynx and speech were entirely impossible. The diaphragm was dissected away and the trachea sutured; normal breathing and voice were restored. Case II. Female, 21 years old, gave a history of catarrhal inflammation of the throat for years; pain, dyspnea on exertion, and attacks resembling spasmodic croup developed within the past two years, with a slight sound at each respiration. Examination showed a stricture of the trachea a short distance below the cords, the diameter of which was about half the distance of the cords from each other. Successful operation by dividing the trachea longitudinally, reflecting the mucous membrane, excision of the stricture, and immediate suture of the entire wound. For two days the patient was nourished by the rectum, and then small quantities of liquid food were given her. Wound healed by first intention, voice was never in the least affected.

Local Anesthesia.—A. B. JOHNSON† believes that the field of local anesthesia should be strictly limited to operations upon special regions in which it is peculiarly applicable, to operations small in extent and simple in technique, of short duration, and to cases rather rare, in which the strongest contra-indications exist to the administration of a general anesthetic. Ethyl-chloride should be used only for very small incisions or punctures. Cocaine and eucaine may be applied in a variety of ways; mucous membranes may be painted or sprayed with a solution; they vary considerably as to the rapidity with which anesthesia may be obtained with a solution of a given strength; in the case of the mucous membrane of the mouth, pharynx and nasal fossæ, it is safer to paint the surface with a small amount of a 5 per cent. solution. In the subcutaneous use of these drugs, a solution of from 1 to 4 per cent. is used; in a strong adult a quantity of solution equal to 1½ grains of cocaine may be safely used, if the region to be operated on is not very vascular and the incision is to be followed by some bleeding. Five minims of a 4 per cent. solution have been followed by sudden symptoms of intoxication when injected into the neighborhood of the exit of the supra-orbital nerve. The infiltration method has some advantages, but is attended often with great disadvantages, in one case having been followed by suppuration in the tongue and floor of the mouth. The use of salt solution with a minute quantity of cocaine appears to be the safest of these solutions.

*Jour. Am. Med. Assn., June 10, 1899.
†N. Y. Med. Record, June 10, 1899.

Diphtheritic Conjunctivitis: Cured With Anti-Toxin.—G. H. BELL* reports a case of conjunctivitis in a child of two years; the conjunctiva was covered with a dirty, grayish membrane, from which a culture of Klebs-Loeffler bacilli was obtained; eleven hundred units of fresh serum were injected into the thigh; the eyes were irrigated with a solution of bi-chloride of mercury, 1 to 5000. Two days later there was marked improvement, but some of the membrane still remaining, nine hundred units of anti-toxin were injected. On the following day the conjunctiva assumed a soft and very red appearance, and a slight purulent discharge which remained was checked in a few days. The cornea was not involved.

Sanitary Lessons of the War.—G. M. STERNBERG,† after a review of the conditions prevalent during the war, states that the principal lessons to be derived from the recent experiences may be summed up as follows: A trained medical corps hardly adequate for an army of 25,000 men cannot control the sanitary situation when this army is quickly expanded to 250,000; physicians and surgeons from civil life are not prepared to assume the responsibilities of medical officers charged with administrative duties and sanitary supervision of camps; the proper performance of such duties require military training and experience; courage and patriotism on the part of officers and men cannot take the place of knowledge and experience. Training and discipline are essential factors in the preservation of health in garrison or in the field. These deficiencies should be remedied by preparation in time of peace.

Some Further Observations on Obstetric Cases.—J. H. BARRY‡ refers in a general way to a series of one hundred cases, discussing briefly occipito-posterior cases, shoulder extraction, and malarial fever in the puerperium. He has found malaria a very common complication, and always gives quinine in the lying-in period where a history of malaria, remote or recent, can be elicited.

Bactericidal Action of Extracts of the Teniæ.—RAMOND and PICON§, after considerable experimen-

*N. Y. Med. Rec., June 10, 1899.
†Jour. Am. Med. Assn., June 10, 1899.
‡New York Medical Journal, June 3, 1899.
§La Tribune Medicale, March, 1899.

tation with the physiologic serum of teniæ, found that this extract or serum had a decidedly bactericidal effect upon various micro-organisms, viz.: Staphylococcus pyogenes aureus, albus and citreus, micrococcus tetragenus, proteus vulgaris, spirillum of cholera, streptococcus pyogenes, bacillus typhosus, etc. The colon bacillus was least affected and developed slowly in the extract. The tubercle bacillus did not develop. These results explain the common observation, as already expressed by Gubler, Goeller and others, that individuals affected with teniæ are seldom attacked by internal infection.

The Cavendish Lecture on the Etiology and Diagnosis of Cerebro-Spinal Fever.—OSLER.* Notwithstanding the fatality of cerebro-spinal meningitis, it attacks in epidemics comparatively few individuals. No other known fever is fatal in so large a proportion of those attacked. Cerebro-spinal fever bears certain relations to pneumonia in point of contagion—certain symptoms and pathologic manifestations, as leucocytosis, frequency of herpes, fibrinopurulent exudate, resemblance of specific germs, etc. The author's experience and investigations lead him to the belief that the diplococcus intracellularis meningitidis is the specific cause of the disease. The lumbar junction was made in 16 cases and in 13 of these this germ was found on both cover-slips and cultures. These conclusions are borne out by Weichselbaum, Jaeger, Huebner, Councilman and others. He considers Netter's position, viz., that the so-called meningococcus is a degenerate form of the pneumococcus, as illogical and untenable. Mixed infections with other organisms are not uncommon, pneumococci, staphylococci, streptococci, etc., being found in connection with the meningococcus. The symptomatology of this form of meningitis differs materially from that of other forms. The onset is very abrupt. The fever is exceedingly variable; the curves may resemble those of typhoid fever, malaria, etc. Sometimes the maximum temperature is in the morning; at others in the evening. Skin rashes are almost the rule, occurring in some form in 13 of the author's 21 cases. Leucocytosis was present in every case. Kernig's sign is very reliable, being present in nearly all of these cases. The lumbar junction, both as a diagnostic and a therapeutic agent, yields splendid results. The author considers in detail the sporadic cases of cerebro-spinal meningitis that have come under his observation, as well as the pneumococci meningitis. No special drugs were used in the treatment of these cases. Morphia was given freely to alleviate pain, sponging to lower the temperature. The withdrawal of the cerebro-spinal fluid through junction and laminectomy were used with possible benefits.

*Philadelphia Medical Journal, July 1, 1899.

Practical Therapeutics.

Treatment of Syphilis by Bacelli Intravenous Injections of Mercury.—D. TAIT* calls attention to this neglected method of treatment, which, under certain conditions, possesses many advantages. It is based on the fact that mercury has no effect on the organism till it enters the blood. The most practical solutions used are the cyanid. $^1/_{100}$ and $^1/_{200}$, and the sublimate $^1/_{500}$ to $^1/_{1000}$; the amount injected daily varies from 1 to 3 c.c. Any prominent vein over the flexor surface of the elbow is used. No thrombus occurs in the vein, and a series of injections can be made in the same vein without causing local or general disturbances. The value of the method is illustrated by the report of fourteen cases. It should be regarded of infinite value in cases where other methods have failed, and in cases demanding rapid action or early intense mercurialization and those of exceptional severity.

Arsenic in Chronic Malaria.—C. E. WOODRUFF† maintains that the reason for the persistence of malaria in so many of the soldiers engaged in the late war is that arsenic administered was given in doses entirely too small; large doses are given in tropical climates and are almost always successful in cases which resist quinine. The method advised is to produce cinchonism, if quinine has not been recently taken; arsenic is then begun, given in the form of Fowler's solution, five to ten drops three times daily, increasing the dose daily by one drop until slight puffiness of the lids shows that saturation with the drug has been attained; the dose may then be reduced to ten or five drops and continued for three or four weeks longer. A brisk mercurial purge is a routine and necessary beginning of the treatment of every case.

Hydrochloric Acid — Simple Method of Administering.—C. D. AARON‡ submits a suggestion with regard to the administration of this acid which obviates contact of the acid with the teeth. He found that two capsules so arranged that a smaller one containing the drug was encased by a larger one, would give sufficient thickness to obviate the difficulty of quick penetration and would retain the drug for a long time. It gives the patient ample time for swallowing and reduces whatever annoyance or risk is involved to a minimum. The patient is instructed to use an ordinary dropper for fitting the capsule immediately before taking. The cap of an "O" capsule will fit in the bottom of an "OO" capsule, and can hold fifteen minims of hydrochloric acid.

*Jour. Am. Med. Association, June 17, 1899.
†Phila. Med. Jour., June 3, 1899.
‡Jour. Am. Med. Association, June 24, 1899.

Mutose.—KOCH*: Mutose is a new albumin preparation of vegetable origin, differing in this respect from most other concentrated foods, as nutrose, somatrose, tropon, etc. It is a yellow, slightly hygroscopic powder, largely soluble in cold water. It is readily absorbed, administered either per os or per rectum. Its nutritive power, as demonstrated in V. Noorden's laboratory, was very satisfactory.

Prevention of Hay Fever. — DR. ALEXANDER RIXA,† referring to this subject, writes as follows: From the time I found the pollen to be the exciting cause of the disease, I concluded in a logical way upon the proper treatment. I conceived the idea of rendering the receptacle aseptic by preparing the soil for the reception of the pollen. Naturally, they will find no proper soil for a possible generation, propagation or development, destroying their existence in embryo, so to speak, and with it the real cause of hay fever. For this purpose I decided on the following treatment:

About two weeks before the onset of the disease I commenced to irrigate or sterilize the nasal cavity and the post-nasal spaces with a harmless antiseptic solution, using the douche and atomizer. After giving a great number of antiseptics a fair trial, I decided on hydrozone as the most innocuous and most powerful germicide. Hydrozone is a 30-volume aqueous solution of peroxide of hydrogen. At the beginning I use it for irrigation diluted in the proportion of one ounce of hydrozone to twelve ounces of sterilized water. Nearing the period of the expected onset of the disease, I increase the dose to two or three ounces of hydrozone to twelve ounces of the sterilized water, according to the severity of the disease, using the douche, either tepid or cold, four times a day—morning, noon, evenings and at bedtime—while during the intervals I use the atomizer, with a solution of hydrozone and pure glycerin, or sterilized water, one to three, thus keeping the nares perfectly aseptic during the entire period, and preventing the outbreak of the disease in consequence thereof.

A Good Remedy in the Early Stages of Tuberculosis.—DR. N. M. BASKETT writes that he has found Cord Ol. Morrhuæ Comp. of great service in the primary stages of phthisis pulmonalis, while it has proved of advantage in his hands in all stages of the disease. It is particularly in those cases where the stomach becomes so rebellious and so intolerant of medication that this remedy is well borne and beneficial to the sufferer. Among the cases in which it has been found of service is the following: M. H., female, white, age 16, American, tall, slim; slightly cachectic; poorly developed; general health below normal; suffers from amenorrhea; has some cough; mammary glands undeveloped; pulse 90; elevation of temperature half degree above normal; no expectoration with cough; no sinking of tissues above clavicle; slight dullness on percussion in apices of both lungs; auscultation reveals dry râles in apices of both lungs; slight hoarseness; history shows that menses appeared at fourteen, and were regular for three or four months, though scanty and painful, then ceased and had not reappeared up to present date. Prescribed Cord. Ol. Morrhuæ Comp. (Hagee), teaspoonful four times per day; tinct. ferri chlorid, ten drops three times per day, and occasional hot hip baths. The menstrual flow was re-established in two months and recovery was rapid and uneventful. At this time the patient is in excellent health and has had no tendency to relapse to her former condition.

*Centralblatt für innere Medicin, June 10, 1899.
†Journal A. M. A., Jan. 21, 1899.

A Useful Present.—W. R. Warner & Co., of Philadelphia, New York and Chicago, are distributing free to doctors and druggists a very complete list of drugs, giving apothecary and metric doses. They are arranged in convenient columns and printed on coated linen cloth, size 21x14, for hanging at the prescription counter or in the doctor's office for ready reference. It will be sent to any doctor or druggist upon request. Drop them a postal for it.

Fine Carriages Cheap. — The Receiver of the Columbus Phaeton Company, Norwich, Conn., has been ordered by the Superior Court to "complete and sell" a large number of physicians' carriages, wheels and shafts. Prices cut almost in two in some instances. WM. H. PALMER, JR., Receiver of the Columbus Phaeton Company.

NEW YORK CITY, April 10, 1899.
The Ammonol Chemical Co., New York City:
Gentlemen—Your preparation known as Ammonol has proved a great success in cases of malaria fever, rheumatism and painful menstruation, and I take pleasure in testifying to these facts. Sincerely yours,
DR. ROBERT PECK.

Resinol Chemical Co.:
Gentlemen—I have been using your Resinol ointment for about two years. I first used it in an obstinate case of scrotal eczema, and the result was magical. Since then I have prescribed it in cases of pruritus ani, pruritus vulvæ eruption of poison oak, hemorrhoids, herpes and tinea capitis, and in all cases the results have been very gratifying. I think a fair trial will convince the most sceptical of the value of the ointment. It has given me better results in the class of cases in which I used it than anything I have used in twenty-two years' general practice. Yours very truly,
Providence, R. I. R. FRANK C. BROWN, M.D.